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DAIRY FARM MANAGEMENT

IN NOVA SCOTIA

[by]

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FOREWORD

This study has been carried out under the direction of the Economics Division, Marketing Service, Dominion Department of Agriculture, in co-operation with the Nova Scotia Department of Agriculture.

The author wishes to express his appreciation to all who assisted him, especially to Dr. W. V. Longley, Director of Extension Services, Nova Scotia Department of Agriculture, for his advice and guidance; to Dr. H. L. Patterson for his helpful criticisms and to Messrs. G. A. O'Brien, H. McLeod and Keith Murray, who assisted in the field work.

The generous co-operation of the many farmers who gave records of their farm operations is also gratefully acknowledged.

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C. H. Chisholm(1)

Introduction

The financial success of a business is a criterion of efficiency. This applies equally to the business of farming, as to other businesses. In any given area in which physical conditions and economic opportunities, such as transport and marketing facilities and prices are similar, the success or otherwise of an individual business is due to other factors which can be said to be within the control of the individual operator. To obtain an overall picture of farming conditions within an area, detailed information is obtained from a number of representative farm operators. The information is then analysed, studied and comparisons drawn. In this bulletin an attempt is made to study the business of farming in some dairy districts in Nova Scotia.

Method and Scope of the Study

Detailed records of the farm business of 169 dairy farmers were obtained by the questionnaire method in the summer of 1946 in the areas of Shubenacadie, Truro, Tatamagouche and Scotsburn. The farms were considered to be representative of the typical farm organization in each area. Data for the year ended June 30th, 1946, were obtained regarding farm receipts and expenses, inventories, size of farm, live stock, area cropped and other farm practices.

Location and Description of Areas Surveyed

The areas in which records were obtained represent four different types of dairy farming in Nova Scotia.

The shaded portion of the sketch (Figure 1) on page 2, shows the location of the four areas mentioned.

The Shubenacadie area comprises the districts of Brookfield, Stewiacke, Shubenacadie, Milford and other smaller areas, situated nearby. A similar type of farming is carried out in all these areas and receipts from fluid milk constitute 69 per cent of all income. Proximity to the Halifax market gives it a favoured position in respect to fluid milk. The soils in this area are heavy and compact causing difficulty in cultivation. In the growing of hay and cereal crops they rank among the best soils in the province.

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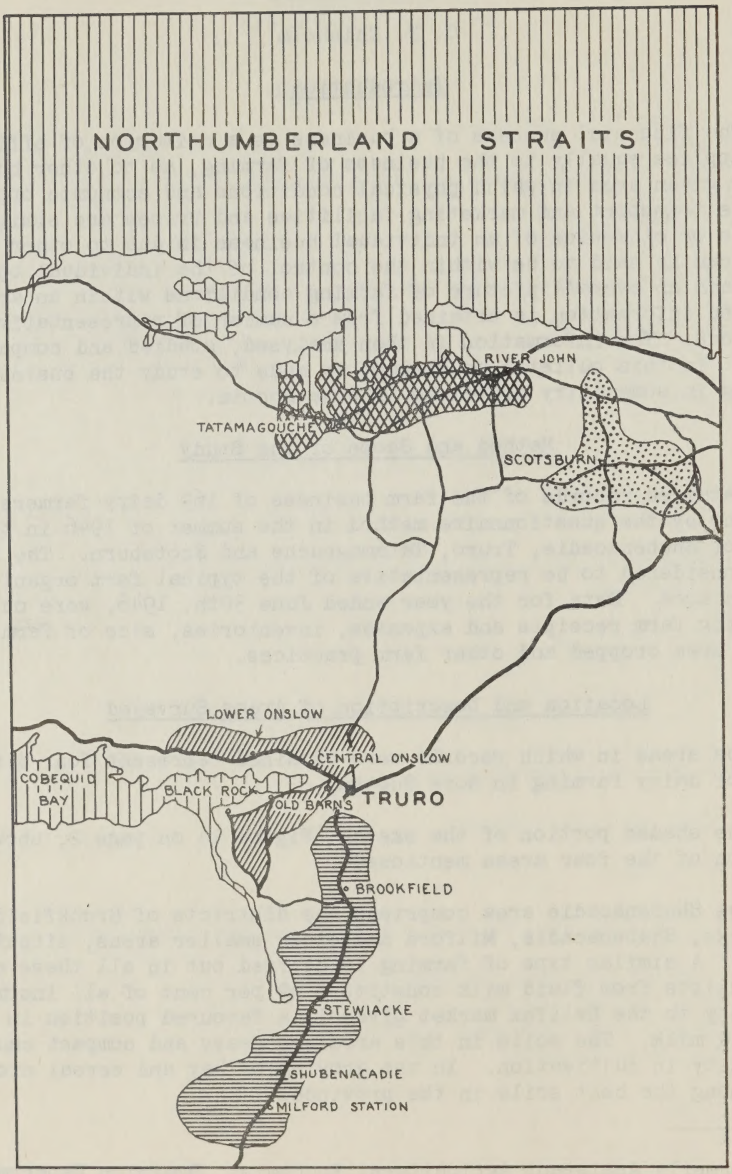
NORTHUMBERLAND STRAITS
RIVER JOHN
TATAMAGOUCHE
SCOTSBURN
LOWER ONSLOW
CENTRAL ONSLOW
COBEQUID BAY
BLACK ROCK
OLD BARNS
TRURO
BROOKFIELD
STEWIACKE
SHUBENACADIE
MILFORD STATION
LEGEND
PAVED ROADS
SECONDARY ROADS
SHUBENACADIE AREA
TRURO AREA
TATAMAGOUCHE AREA
SCOTSBURN AREA

The districts included in the area designated Truro are Old Barns, Clifton, Princeport, Central Onslow and Lower Onslow. Farming is more diversified in this area than in Shubenacadie, with emphasis on cash crops and dairying, the latter accounting for 60 per cent of all cash income. Milk from this area is shipped to Truro and Halifax fluid milk distributors and also to the condensery in Truro. The textures of the soil vary from sandy loam to sandy clay loams and are ideal for the growing of vegetable crops. Drainage is good and the soils are deep and stone free. These factors make the soils in these areas the best upland soils occurring in the province.

The area designated as Tatamagouche includes the districts of Bayhead, New Annan, Waugh River, Waldgrave, Denmark, Brule, Louisville, Marshville and River John. The main source of income is derived from the sale of cream and hogs, the two comprising approximately 60 per cent of all cash income. The soils in Tatamagouche west are of heavy texture and difficult to work. However, they are well suited to the growing of hay and cereal crops. Soils east of Tatamagouche to River John are of a lighter texture and are more suitable for the use of a variety of crops.

The area designated as Scotsburn includes in the main the districts of Scotsburn, Lyons Brook, Heathbell, Rogers Hill, Plainfield, Meadowville and a few farms in the vicinity of Toney River. This area also derives its main source of income from cream, (42 per cent) and also from the sale of hogs and poultry. The soils in the area vary widely in texture, drainage, topography and stone content, thus giving rise to various agricultural usage. Some soils especially in the vicinity of Rogers Hill, have deteriorated under continuous cultivation.

FARM BUSINESS ORGANIZATION IN THE FOUR AREAS

The first section of this study deals with the farm business organization of the four areas under the headings of: Farm Capital, Land Use, Farm Live Stock, and Receipts and Expenses. Variations will be noted from area to area and within areas between different farms.

Farm Capital

The average value of farm capital in buildings, land, stock and machinery on 50 farms in Shubenacadie was $11,135; $11,801 for 20 farms in the Truro area, $6,902 for 55 farms in Tatamagouche and $6,721 for 44 farms in Scotsburn. Separate figures for each area are given in Table 1.

Table 1. Distribution of Capital

	Average Investment				Per cent of Total Investment			
	Whole Milk Farms		Cream Farms					
	Shubenacadie	Truro	Tatamagouche	Scotsburn	Shubenacadie	Truro	Tatamagouche	Scotsburn
	$	$	$	$	%	%	%	%
Buildings	3926	3682	2337	2175	36	31	34	32
Land	2657	3924	1488	1659	23	33	22	25
Stock	2914	2572	1829	1765	26	22	26	26
Machinery and Equipment	1638	1623	1248	1122	15	14	18	17
Total	11135	11801	6902	6731	100	100	100	100

The larger farm unit accounts in part for the higher average capital investment in the Shubenacadie and Truro areas - the fluid milk farming areas. Land values per acre were: $25 in Shubenacadie, $39 in Truro, $27 in Tatamagouche and $23 in Scotsburn. The higher value in Truro is on account of the superior type of soil.

Buildings are more elaborate and better equipped in the "fluid milk" areas. Real estate represented 59 per cent of the average capital investment in Shubenacadie, 64 per cent in Truro, 56 per cent in Tatamagouche and 57 per cent in Scotsburn.

Although the average capital per farm invested in live stock in the fluid milk areas is considerably above that of the cream areas, the percentage of capital invested in live stock to total capital investment is similar in all areas. The percentage - 26 per cent - is high but the main income of all the farms is derived from live stock and live stock products. In the Truro area, the percentage is somewhat lower on account of higher income returns from cash crops.

Between fourteen and eighteen per cent of farm capital was invested in machinery and equipment in each area. This percentage would seem to indicate a fairly high degree of mechanization on all farms and no appreciable difference between "fluid milk" and "cream" areas.

Farmers in the fluid milk areas due to greater volume of business and more rapid turnover are in a more favourable position to secure more machines for farm work. However, farm organization in both areas is relatively similar and machinery requirements are essential to maintain economic production.

As records were taken at the end of the crop year, feed stocks were almost depleted and amounted to less than one per cent of capital in each area.

Table 2. Variation in Amount of Capital per Farm

Capital	Number of Farms			
	Shubenacadie	Truro	Tatamagouche	Scotsburn
$	no.	no.	no.	no.
Less than 3000	--	--	3	1
3000 - 6999	10	3	30	26
7000 - 10999	20	8	15	16
11000 - 14999	11	6	6	1
15000 - 18999	5	1	1	--
Over 19000	4	2	--	--
Total	50	20	55	44

The amount of capital invested in these farms especially in the fluid milk areas would indicate that a considerable investment in real estate, live stock and equipment is required to establish and operate dairy farms. Table 2 gives the variation in capital. Forty per cent of the farms in the fluid milk areas fall into the seven to eleven thousand dollar class, while in Tatamagouche 55 per cent, and in Scotsburn 59 per cent fall in the three to seven thousand dollar class.

Land Use

Table 3. Average Size of Farm

	Average Acres Per Farm			
	Shubenacadie	Truro	Tatamagouche	Scotsburn
	acres	acres	acres	acres
Crops	50	43	39	36
Rotation Past	6	4	11	10
Improved Pasture	11	11	5	7
Rough Pasture	26	15	13	20
Marketable Wood	37	24	12	18
Other	131	96	59	77
Total Acreage	261	193	139	168

Farms in the Shubenacadie area were largest in total acreage averaging 261 acres compared with 193 acres in Truro, 139 acres in Tatamagouche and 168 acres in Scotsburn. A somewhat different picture is presented with respect to percentage of land cropped. Cropped land and rotation pasture made up 21 per cent of total acreage in Shubenacadie, 24 per cent in Truro, 36 per cent in Tatamagouche and 27 per cent in Scotsburn. The Shubenacadie area has a large number of acres per farm in woods - both marketable and culled - and waste land. Farms in the Tatamagouche and Scotsburn areas had the highest proportion of land in crops and rotation pasture.

Table 4 shows the variation in the size of farms.

Table 4. Variation in Size of Farms

Area in Acres	Number of Farms			
	Shubenacadie	Truro	Tatamagouche	Scotsburn
	no.	no.	no.	no.
Less than 100	2	--	16	4
100 - 199	16	9	28	28
200 - 299	16	7	11	9
300 - 399	10	4	--	2
400 - 499	1	--	--	--
500 or more	--	--	--	1
Total	50	20	55	44

Field Crops

Table 5. Percentage of Each Crop in Total Cropped Area

	Shubenacadie	Truro	Tatamagouche	Scotsburn
	%	%	%	%
Hay	84.1	69.6	63.3	62.8
Oats	10.2	15.8	22.8	23.9
Other Grains	2.7	2.4	11.1	9.1
Corn	.2	- -	- -	- -
Turnips	.9	5.6	.9	1.3
Potatoes	1.3	4.7	1.1	1.8
Fruits and Vegetables	.6	1.9	.8	1.1
Total	100.0	100.0	100.0	100.0

The cropping systems of the four areas are not fundamentally different. In Truro, the area devoted to turnips, potatoes and vegetables is significant. As was indicated in the description of areas, the soil in this area is suitable to the production of such crops in addition to grain and hay. Potatoes are grown there for the early market and contribute in large measure to the cash income of the farms. Another significant point is the acreage under turnips. Turnips are grown for a two-fold purpose, namely for market and as a succulent feed for livestock. This is a very excellent combination as the marketing of the better quality turnips helps in some measure to offset the otherwise high cost of production of this crop as a succulent feed.

In Shubenacadie, the main crop grown is hay with 84 per cent of the area devoted to this crop. The type of soil lends itself to the growing of hay and grain although it would seem that grain is grown merely as part of a rotation rather than for its actual use. The most outstanding fact to note is the almost complete absence of corn or turnips grown as a succulent feed.

In most fluid milk areas of Eastern Canada where cows are fed intensively to produce milk, corn or turnips usually enter into the crop rotation. It may be possible to produce milk on only hay and mill feeds but it would seem that such a ration may be one of the underlying causes for the high maintenance rate of herds in this area. The area with its type of soil does not lend itself to the growing of corn, but turnips can be grown quite successfully. The high cost of labour involved in their production has been one of the reasons why they are not grown to any extent today in this area. A doubt also exists in the minds of many farmers as to their value as a feed for live stock.

In the Tatamagouche-Scotsburn area hay, oats and other grain account for 96 to 97 per cent of the total cropped acreage. The main difference between these areas and the fluid milk districts is the greater acreage under grains in the former. Grain grown in these areas is utilized on the farm in the production of hogs and poultry. There would appear to be a place in the farm organization in these districts for a crop that could be used either as a feed crop or turned into cash. Turnips could be utilized in this manner especially on farms which employ family labour, or machinery could be used on a community basis which would reduce manual labour. The demand for this field crop is growing, as a better quality product is being put on the market.

Potatoes were grown on all farms, but with the exception of the Truro area, were produced mainly for home consumption.

The yield per acre in the districts surveyed and the yield for Nova Scotia are presented in Table 6. The 1945 crop year was particularly favourable for hay and pasture, but a late spring prevented the sowing of grain sufficiently early for an average yield.

Table 6. Yield per Acre of Crops

Crop		N. S. 5-year Average 1941-45	N. S. 1945 Average	Area Surveyed: Shubenacadie	Truro	Tatamagouche	Scotsburn
Hay	tons	1.8	1.8	1.7	1.9	1.5	1.8
Oats	bus.	31	28	27	41	31	27
Other Grains	bus.	28	26	25	44	29	22
Turnips	bus.	509	440	779	780	688	680
Potatoes	bus.	141	142	165	189	171	174

Live Stock

Farm organization in all areas is based on live stock production which provides the most common market for the greater part of all crops produced. Only in the Truro area is the growing of cash crops of any importance.

Table 7. Average Number of Live Stock per Farm

Group of Live Stock	Number per Farm: Shubenacadie	Truro	Tatamagouche	Scotsburn
Horses	2.5	2.2	2.4	2.4
Cows	15.2	13.8	8.2	8.7
Other Cattle	10.1	8.5	7.3	7.4
Pigs	.6	.6	8.1	5.0
Sheep	- -	- -	.9	.3
Poultry	59	93	95	125

Horses - All farms in the areas surveyed maintained horses, averaging 2.4 per farm. While tractors are becoming more numerous especially in the fluid milk areas, it is difficult to carry on farm operations without horses. The addition of a tractor to a farm does not seem to reduce materially the number of horses used to carry on farming as it is carried on in these areas. The number of colts raised per farm is negligible and a sufficient number is not being raised to replace ageing work stock.

Cattle - The live stock program in each area is based on the income received from cattle and cattle products. The importance of cattle in all areas is emphasized by the fact that cattle in the Shubenacadie area constitute 86 per cent of the value of all live stock, 84 per cent in the Truro area, 66 per cent in Tatamagouche, and 66 per cent in Scotsburn. Herds on all farms surveyed were of the dairy type.

As shown in Table 7, cows in the Shubenacadie area averaged 15.2 per farm, 13.8 in Truro, and 8.2 and 8.7 respectively in the Tatamagouche and Scotsburn areas.

Cows in the fluid milk area are usually valued higher than those in a "cream" area. The average value was $132 per milk cow in the Shubenacadie area, $122 in Truro, $100 in Tatamagouche and $97 in Scotsburn.

The number of other cattle raised on the farm is of some importance. In the Shubenacadie area there was an average of 10.1 per farm, entirely young cattle and calves. This should be sufficient to maintain the herds. However, the replacement rate in herds in that area is very high due mainly to disease, brought about in large measure by buying cows to maintain milk supply. The question of whether it is more economical to buy cows rather than raise young stock for replacements in the herd is debatable. To date the drawback to buying is the risk encountered as regards disease. In the Tatamagouche-Scotsburn areas considerable numbers of both cows and young stock are sold either to the fluid milk districts of Nova Scotia or to buyers from outside the province. As an indication relative cost of replacement of herds, the average amount spent for cattle in the Shubenacadie area was $306 per farm while in the Truro, Tatamagouche and Scotsburn areas it was $154, $45 and $22 respectively.

Table 8 gives the breeds of cattle in various areas.

Table 8. Breeds of Cattle Kept by Areas

Breed	Number of Herds			
	Shubenacadie	Truro	Tatamagouche	Scotsburn
Guernsey	18	5	3	19
Holstein	13	7	--	--
Jersey	--	4	38	15
Ayrshire	3	3	--	4
Mixed*	16	1	14	6
Number of Farms	50	20	55	44

Note: * Mixed breeds refer mainly to crosses between the most common breeds in the district.

In the Shubenacadie area 62 per cent of the farms kept Guernseys and Holsteins while in the Truro area these two breeds are maintained on 60 per cent of the farms with Holsteins predominating. Before the war the bulk of the fluid milk from this area was used for manufacturing purposes. A condensery in Truro disposed of all the surplus in the form of canned milk and similar products. In the "cream" areas Jerseys and Guernseys predominated.

Approximately 50 per cent of the fluid milk farms kept herd sires although the adoption of artificial insemination in parts of those areas will probably cause a reduction in that number. In Tatamagouche 20 per cent of the farms and in Scotsburn 27 per cent maintained herd sires. Herds are smaller than in the fluid milk areas, and there are a number of Agricultural Societies, one purpose of which is the maintenance of a purebred sire for a community or a group of farmers within an area. In the Tatamagouche area four such societies were in existence in 1945-1946 while three societies were operating in and around the Scotsburn area.

Swine - Table 7 gives the average number of hogs per farm. In the fluid milk areas of Shubenacadie and Truro an average of .6 was kept, these being raised mainly for home consumption. The figures for the Tatamagouche and Scotsburn areas are 8.1 and 5.0 respectively. Hog production occupies an important place in farm organization in these areas with all but seven of the farms in Tatamagouche area reporting hogs being raised for market. Sales of market hogs for this area averaged 13 per farm. Thirty-eight of the 44 farms surveyed in the Scotsburn area marketed an average of 7 hogs per farm.

Fifty-eight per cent of the farms in Tatamagouche keeping hogs, also kept brood sows, averaging 2.4 brood sows per farm. In Scotsburn 50 per cent maintained sows averaging 1.4 per farm.

Sheep - Sheep raising was of little importance in any of the areas. Five farms reported keeping sheep in Tatamagouche with an average flock of 22. In Scotsburn seven farms reported flocks averaging 25, the slightly higher number being due to the greater abundance of rough pasture.

Poultry - Poultry flocks averaged 59 birds in Shubenacadie, 93 in Truro, 95 in Tatamagouche and 125 in Scotsburn area. However, poultry was maintained on only 61 per cent of the farms in Shubenacadie, on 60 per cent of farms in Truro, on 71 per cent of farms in Tatamagouche, and 89 per cent of farms in Scotsburn. The increase in recent years of poultry in the Scotsburn area is the most marked change in farm organization in that area. The availability of an organized agency to handle efficiently and at all times the products of the poultry industry would seem to be the main reason for this increase. The

Creamery at Scotsburn operates a poultry killing plant and egg grading station which gives excellent service to all poultry producers in the area and is conveniently located. Poultry is displacing to some extent hog production in this area.

Table 9. Average Value of Live Stock per Farm

Group of Live Stock	Shubenacadie	Truro	Tatamagouche	Scotsburn
	$	$	$	$
Horses	353	297	278	299
Cows	2092	1660	819	830
Other Cattle	496	492	368	334
Pigs	15	16	204	112
Sheep	--	--	16	35
Poultry	65	94	110	147
Total Live Stock	3021	2559	1795	1757

Table 10. Percentage Value of Live Stock per Farm

Group of Live Stock	Shubenacadie	Truro	Tatamagouche	Scotsburn
	%	%	%	%
Horses	11.7	11.6	15.5	17.0
All Cattle	85.6	84.1	66.1	66.2
Pigs	.6	.6	11.4	6.4
Sheep	- -	- -	.9	2.0
Hens	2.1	3.7	6.1	8.4
Total	100.0	100.0	100.0	100.0

Farm Receipts

Table 11 below shows the source of cash receipts per farm in the different areas. In all areas the sales of live stock products constituted the main source of income ranging from 45 per cent in Tatamagouche to 72 per cent in the Shubenacadie districts. Cash farm receipts were highest in the Truro area with an average of $4,349 per farm, followed by $4,288 in Shubenacadie, $2,470 in Tatamagouche and $2,463 in Scotsburn.

Table 11. Average Cash Receipts on 169 Farms in Nova Scotia in 1945-46

	Shubenacadie 50 farms		Truro 20 farms		Tatamagouche 55 farms		Scotsburn 44 farms	
	Amount Per Farm	Per Cent	Amount Per Farm	Per Cent	Amount Per Farm	Per Cent	Amount Per Farm	Per Cent
	$	%	$	%	$	%	$	%
Crop Sales	130	3.0	867	19.9	30	1.2	165	6.7
Live Stock Sales	592	13.8	413	9.5	729	29.5	638	25.9
Live Stock Products Sales	3097	72.3	2733	62.9	1132	45.8	1219	49.5
Miscellaneous Receipts	469	10.9	336	7.7	579	23.5	441	17.9
Total Cash Receipts	4288	100.0	4349	100.0	2470	100.0	2463	100.0

Crop Sales - The Truro area surveyed derived approximately 20 per cent of total cash receipts from crop sales and averaged $867 per farm. Potatoes sales were 49 per cent of the crop sales, vegetables 30 per cent, turnips 17 per cent and the remaining 4 per cent was composed of the sale of hay and grain. Potatoes for market were grown on 16 of the 20 farms surveyed in the Truro area, vegetables on 13 farms and turnips on 10 farms. The large percentage of income derived from potatoes was determined to some extent by a strong price for the 1945 crop. Potatoes hold a very definite place in the farm organization of this area and were a valuable source of cash income. The sale of turnips averaged approximately $150 per farm but were grown for market on only half of the farms surveyed. Income from this source could be increased as the market for turnips is not limited to sales within the province and surplus or unmarketable turnips can always be utilized on the farm.

In the Shubenacadie area crop sales amounted to an average of $130 per farm or an average of 3 per cent of all farm income and as such does not constitute a significant part of farm receipts. Potatoes contributed 51 per cent of crop income and the sale of hay 35 per cent. However, of the fifty farms surveyed in the area, only 14 marketed potatoes and 12 sold hay.

In the Tatamagouche area approximately one per cent of farm income is derived from the sale of crops. In this area potatoes are grown mainly for home consumption and any available surplus is marketed generally through local stores and in small quantities. In Scotsburn area 6.7 per cent of farm income was derived from the sale of crops.

This area is closer to the town of Pictou and New Glasgow and has a more favourable opportunity to market potatoes and vegetables. Of the average $165 per farm received from crops, hay sales constituted 25 per cent, potatoes 32 per cent and vegetables 39 per cent.

Live Stock Sales -

Table 12. Percentage and Source of Income from Live Stock

	Shubenacadie	Truro	Tatamagouche	Scotsburn
	%	%	%	%
Cows	65	52	22	27
Calves	12	12	2	1
Heifers and Steers	--	--	5	5
Hogs and Pigs	--	--	62	34
Poultry	23	36	6	17
Other Live Stock	--	--	3	16
	100	100	100	100

As shown in Table 11, live stock sales were an important source of farm income averaging $592 in Shubenacadie area, $413 in the Truro area, $729 in the Tatamagouche area and $638 in the Scotsburn districts. The source or type of live stock contributing to these totals is shown in Table 12.

In the fluid milk areas the main source of income is from the sale of cows and calves. In the cream areas it is the sale of hogs in Tatamagouche and hogs and poultry in Scotsburn that constitute the main source. In the fluid milk areas the sales of live stock are offset somewhat by livestock purchases. This is especially true in the case of cows and Table 13 below gives some indication of the extent to which this occurs.

Table 13. Sales and Purchases of Cows - Average per Farm

	Shubenacadie		Truro		Tatamagouche		Scotsburn	
	Sales	Purchase	Sales	Purchase	Sales	Purchase	Sales	Purchase
	$	$	$	$	$	$	$	$
Cows	383	306	214	154	169	45	174	22

Live Stock Product Sales - Cash receipts from the sale of milk, cream, butter, eggs and other live stock products in the Shubenacadie area averaged $3,097 per farm or 72.3 per cent of all cash income. Of this total the sales of fluid milk comprised 96 per cent and the sale of eggs 3 per cent.

In the Truro area live stock product sales averaged $2,733 per farm or 62.9 per cent of all cash income. Of this income 96 per cent came from milk sales (to fluid milk and condensery operators) and the remainder from eggs, hides and breeding fees.

Live stock product sales averaged $1,132 per farm or 45.8 per cent of cash receipts in the Tatamagouche area. This consisted of 83 per cent from the sale of cream and 15.2 per cent from the sale of eggs. In the Scotsburn area live stock product sales averaged $1,219 per farm or 49.5 per cent of all cash receipts. Eighty-one per cent was derived from the sale of cream and 18 per cent from eggs.

In all four areas the sale of milk or cream constituted the main source of income for live stock products ranging from 81 per cent in Scotsburn to 96 per cent in Shubenacadie. The sale of eggs in the cream areas was also an important source of income.

The higher returns per farm in the Shubenacadie and Truro areas are due primarily to the more remunerative whole milk market.

Miscellaneous Receipts - Of the $469 in miscellaneous receipts in the Shubenacadie area $316 came from the sale of logs or lumber or wood. Of the remaining $153, $114 came from outside employment or custom work with farm machines and $39 from rent, pasturing stock and other minor items.

Table 14. Income from Milk and Cream per Farm and per Cow

Area	Number of Cows per Farm	Income from Milk and Cream per Farm	Income from Milk and Cream per Cow
	no.	$	$
Shubenacadie	15.2	2993	197
Truro	13.8	2619	189
Tatamagouche	8.2	1041	127
Scotsburn	8.7	1007	116

In the Truro area $191 out of the average miscellaneous receipts of $336 per farm came from wood or lumber sales. Thirty-two dollars came from outside employment and the remainder from other minor sources.

Tatamagouche area reported miscellaneous income averaging $579 per farm, $383 of which came from lumber and wood sales, $164 from outside employment and machinery hire and the remainder from fishing, rent and other sources.

Of the $441 in miscellaneous receipts in the Scotsburn area, $303 came from the sale of logs amd lumber and $77 from outside employment.

Current Expenses

An analysis of farm expenses is given in Table 15.

Current expenses were highest in the fluid milk areas averaging $2,704 per farm in the Truro area and $2,599 per farm in Shubenacadie. In the "cream" areas of Tatamagouche and Scotsburn the average current expense per farm was $1,639 and $1,504, respectively. The difference in the amount of expenditures was due primarily to the larger farm business and to higher expenses connected with the production of fluid milk.

In all areas except Tatamagouche the cost of feed was the largest single item of expense, averaging 40.1 per cent of the total in Shubenacadie, 31.9 per cent in Truro, 29.6 per cent in Tatamagouche and 34.5 per cent in Scotsburn. The feed bill is large because of the great emphasis on live stock production and the relatively small amount of high protein feeds that are grown in these districts. Commercial concentrates and mill feeds were the chief kinds purchased by most farmers in the fluid milk areas, while the purchase of coarse grains was more common in the cream areas. The amount spent for purchased feeds in all areas, but especially in the fluid milk districts would seem to indicate the great dependence placed upon the importation of such feeds into Nova Scotia from the western part of Canada.

Labour which includes the cash cost of hired labour and the cost of its board plus the estimated value of family labour was the next largest item of expense, averaging $723 per farm in the Shubenacadie area, $712 in the Truro area, $498 in Tatamagouche and $355 in Scotsburn.

Farm taxes amounted to $90, $118, $48 and $58 per farm in Shubenacadie, Truro, Tatamagouche and Scotsburn respectively. On a per acre basis this amounts to 34 cents in Shubenacadie, Tatamagouche and Scotsburn, and 61 cents in the Truro area. Taxes per crop acre were $1.80 for farms in Shubenacadie, $2.77 for farms in the Truro area, $1.23 for farms in Tatamagouche and $1.61 for farms in Scotsburn. On a basis of real estate value, taxes amounting to $13.67 per thousand dollars valuation in Shubenacadie, $15.51 per thousand in Truro, $12.55 per thousand in Tatamagouche and $15.15 per thousand in Scotsburn.

Table 15. Distribution of Main Current Expenses on 169 Farms in Nova Scotia 1945-1946

	Shubenacadie: 50 farms		Truro: 20 farms		Tatamagouche: 55 farms		Scotsburn: 44 farms	
	Av. per Farm	Per cent of Total	Av. per Farm	Per cent of Total	Av. per Farm	Per cent of Total	Av. per Farm	Per cent of Total
	$	%	$	%	$	%	$	%
Feed (purchased)	1043	40.1	861	31.9	486	29.6	519	34.5
Labour Paid	363	27.9	482	26.3	169	30.4	143	23.6
Labour (family)	360		230		329		212	
Auto and Truck Operating Expenses	148	5.7	130	4.8	126	7.7	91	6.1
Repairs Machine and Real Estate	104	4.0	116	4.3	83	5.1	153	10.1
Fertilizer	95	3.6	133	4.9	95	5.8	92	6.1
Taxes	90	3.5	118	4.4	48	2.9	58	3.9
Seed	51	1.9	47	1.7	41	2.5	56	3.7
Milk Hauling	176	6.8	149	5.5	--	--	--	--
Miscellaneous	169	6.5	438	16.2	262	16.0	180	12.0
Total	2599	100.0	2704	100.0	1639	100.0	1504	100.0

In connection with the cost of operating an automobile an estimate was made by the individual farmers as to the proportion of total mileage which was devoted strictly to farm business. The proportionate cost of maintenance and operation of the automobiles was charged to the farm business on this basis. Trucks used for farm business are included in the same item in the current expenses. The actual cost of operating a truck or car for farm business did not differ greatly in any of the areas.

All but three farmers used commercial fertilizer in the Shubenacadie area with an average expenditure of $95 per farm; all farmers in the Truro area used fertilizer averaging $133 per farm, all but two in the Tatamagouche area averaging $95 per farm, and all farmers interviewed in Scotsburn with an average of $92 per farm. While a considerable amount of this fertilizer was used for pasture improvement, the amount used for crops was large and indicates the necessity of the utilization of commercial fertilizer if even average crop yields are to be grown.

The high cost of seeds in all areas is brought about by the fact that seeds such as timothy and clover cannot be grown as a rule successfully in most areas. A considerable number of farmers bought their potato seed in 1945 which increased the size of this item of expenditure.

Milk hauling is a considerable item of expense in the fluid milk areas and constituted 6.8 per cent of current expenses in Shubenacadie and 5.5 per cent in the Truro area.

Miscellaneous expenses shown in Table 15 include a number of minor expenses on items such as insurance, electricity, telephone, trucking, fuel, and grease, horse shoeing, veterinary, ice, disinfectants, threshing, hired machine work. Such expenses were higher in the Truro area due to more conveniences such as telephone and electricity per farm than in other areas.

Capital Expenses

Table 16. Average Capital Expenses on 169 Farms in Nova Scotia 1945-1946

	Shubenacadie area 50 farms	Truro area 20 farms	Tatamagouche area 55 farms	Scotsburn area 44 farms
	$	$	$	$
Live Stock Bought	413	262	116	89
New Equipment	195	126	106	130
New Building	86	--	24	60
Total Capital Expenses	694	388	246	279

Capital expenses were relatively high in the Shubenacadie area with approximately 60 per cent incurred in the purchase of live stock. As was already pointed out, much of this live stock consisted of cows in milk, bought to maintain the existing milk supplies. All farms in all areas spent a considerable amount on new machinery. In the fluid milk areas this machinery consisted mainly of dairy equipment such as new milking machines and cooling units. In the cream areas general farm equipment such as mowing machines and ploughs were the chief items bought.

The amount spent in new buildings or capital expenditures on existing ones, was not large. While such improvements were considered necessary on many farms in all areas, the scarcity of labour and materials made such expenditures difficult.

Financial Summary

A summary by areas of the average farm business for the year ended June 30, 1946, is presented in Table 17. The first item calculated is the farm income which is the total receipts minus the total expenses. Total receipts is cash receipts plus the inventory increase of live stock feeds and supplies during the year. Total

expenses are obtained by adding current expenses, live stock purchased and an estimated amount for depreciation. Farm income then represents what the farmer receives for his labour and the use of his capital, not including the value of products produced and consumed on the farm.

Table 17. Summary of Farm Business on 169 Farms in Four Areas of Nova Scotia 1945-1946

	Average per Farm			
	Shubenacadie 50 farms	Truro 20 farms	Tatamagouche 55 farms	Scotsburn 44 farms
	$	$	$	$
Cash Receipts	4288	4349	2470	2463
Net Inventory Increase	285	168	102	- 13
Total Farm Receipts	4573	4517	2572	2450
Live Stock Purchased	413	262	116	90
Cash Operating Expense 1/	2274	2447	1306	1284
Unpaid Labour	360	230	329	212
Depreciation 2/	414	390	283	245
Total Farm Expenses	3461	3329	2034	1831
Farm Income (receipts less expenses)	1112	1188	538	619
Interest on Capital @ 4%	445	472	276	269
Labour Income	667	716	262	350
Use of House and Farm Products Consumed on Farm	476	460	437	415
Labour Earnings	1143	1176	699	765

1/ A rate of 6 per cent on machinery and 3 per cent on buildings, closing values, was charged for repairs. This charge for repairs was adjusted on current expenses, depending on whether actual repairs were above or below average, actual repairs however, are included in cash expense.

2/ Depreciation on buildings was charged at the rate of 4.2 per cent and on equipment at the rate of 11.1 per cent of closing values in each case.

The farm income, i.e. receipts less expenses, is shown in Table 17. The main point of interest is the wide variation between the fluid milk areas and the cream districts.

Labour income is a term used to express the amount left to the farmer for his own labour and management after due provision is made for a return on his capital investment. Interest at 4 per cent on the valuation of his capital investment is deducted from Farm Income. As farms in the "fluid milk" areas have considerably more capital invested than those in the "cream" areas, consequently the interest charges are higher.

To obtain what is termed "Labour Earnings", the value of certain perquisites used by the farmer for his living is added to "Labour Income". These perquisites are: use of the farm dwelling as a home, vegetable, meat and dairy products used in the home, and the value of fuel obtained on the farm. Labour Earnings express therefore, the net returns to the farmer, in cash and kind, for his year's farming operations. A comparison of the results from the farm businesses surveyed show larger average return to farmers of the two "fluid milk" areas than those of the two "cream" areas.

Within each area, there were wide variations in the returns to individual farmers. Some made considerable losses while others showed substantial gains. In Table 18, an analysis is given of losses and gains falling within certain brackets of Labour Income.

Table 18. Variations in Labour Income on 169 Farms in Nova Scotia 1945-1946

Labour Income	Shubenacadie		Truro		Tatamagouche		Scotsburn	
	No. of farms	Per cent	No. of farms	Per cent	No. of farms	Per cent	No. of farms	Per cent
$		%		%		%		%
-1000 or more	4	8.0	2	10.0	1	1.8	1	2.3
-1000 to -501	6	12.0	--	--	6	10.9	3	6.8
- 500 to - 1	9	18.0	--	--	16	29.1	4	9.1
0 to 500	10	20.0	6	30.0	17	30.9	15	34.1
501 to 1000	9	18.0	7	25.0	7	12.7	14	31.8
Over 1000	12	24.0	5	25.0	8	14.6	7	15.9
Total	50	100.0	20	100.0	55	100.0	44	100.0

The greatest variation in the labour income is in the Shubenacadie area. In the Truro area only two farms showed a loss in labour income and 50 per cent of the farms made over $500. More than 40 per cent of the farms in Tatamagouche made losses. In Scotsburn the number failing to show a positive labour income was 8, or 18 per cent of the farms surveyed.

SOME FACTORS AFFECTING SUCCESS IN FARMING IN THE FLUID MILK AND CREAM AREAS

It has been shown (table 18) from the information gathered that within specified areas, there is a wide variation in earnings. The question arises - What explanation is there for these differences in success between operators of farms in close proximity with similar soil type and the same marketing facilities over a given period of time? What are the controllable factors?

Size of Business

One obvious factor is the size or volume of the farm business. Farming has become a commercialized industry, and the farmer today is more dependent on money returns to meet operating costs and family living than in the past. There are certain costs such as taxes, depreciation and repairs that remain relatively constant regardless of whether the income is large or small. If the business is small these may absorb all or the major part of the gross income.

In order to establish a standard by which an adequate volume of business can be measured, it is necessary to adopt some unit of measurement. From studies made under similar circumstances it has been found that under average conditions 15 days of work are required to care for a cow producing milk for fluid milk sale for one year, that is 15 days for feeding, milking and other related jobs. On farms selling milk or cream for manufacture 12 days of work are required to care for one cow per year. Thus, for example, a herd of 10 cows producing milk for the fluid milk trade requires 150 work days. One acre of potatoes takes 10 days of work and an acre of hay one day. By adding the hours required to care for the number of acres cropped and the number of live stock maintained a fairly accurate estimate of the amount of work or volume of business carried on by each farmer can be arrived at. In other words, it gives a measure of the size of business.

In this study it was necessary to adopt two standards in connection with the size of farm, one for the "fluid milk areas" and one for the "cream areas". In the fluid milk areas farms with less than 250 work units were classified as small, farms with from 250-400 were classified as medium and farms with over 400 work units as large. In the cream areas farms with less than 200 were considered small, farms with from 200-300 were considered medium and farms with over 300 were large.

Farms with less than 200 work units are usually operated by one full time operator, those with 200-400 are operated by a full time man with the assistance of a man for half a year while those with over 400 units employ two or more men the year round.

Table 19. Labour Earnings Related to the Amount of Work Accomplished per Farm

	Number of Farms	Labour Earnings	Average Productive Work Unit
		$	
70 whole milk farms			
Small Farms	22	379	196
Medium Farms	29	905	320
Large Farms	19	2361	563
99 farms cream shipping			
Small Farms	29	356	153
Medium Farms	48	720	251
Large Farms	22	1070	399

In the "whole milk areas" as shown in Table 19 labour earnings according to size of business measured by amount of work performed averaged $379 per farm for small farms, $905 for medium farms, and $2,361 for large farms. In the "cream areas" with smaller number of work units in the classification labour earnings averaged $356 for small farms, $720 for medium size farms and $1,070 for large farms.

In both the "fluid milk" and "cream" areas labour earnings increase as the size of business increases. This is a clear indication of the fact that the man who was keeping more cows, raising more vegetables, feeding more hogs or chickens, where each such operation was suitable, was the man who had the highest earnings.

It is not always necessary to enlarge the acreage of the farm to obtain a greater volume of business. The volume of business in the cream areas is not sufficiently large to maintain high earnings. It could be increased by expanding the hog and poultry enterprises without acquiring additional land.

Live Stock Efficiency

There are various ways of measuring live stock efficiency such as milk production per cow or egg production per hen. Since all farms included in this study were stressing dairying to some degree the production per cow is a good indication of efficiency with live stock. The milk sold per cow was calculated for all "fluid milk" farms and the butterfat sold per cow for all farms shipping cream. The farm operator who sold the most per cow had the highest earnings.

Table 20. Relation of Production per Cow to Earnings

Production Sold Per Cow	Number of Farms	Labour Earnings $	Average Milk Sold per Cow
70 whole milk farms			
Low Production	19	346	3671
Medium Production	31	1313	6016
High Production	20	1609	8151
99 farms cream shipping			
Low Production	34	613	162
Medium Production	33	781	239
High Production	25	937	323

Purchased feed was the largest item of expense in live stock production, varying from 40 per cent of all cash expense in the Shubenacadie area to 30 per cent in Tatamagouche. Since most of the grain and mill feeds were purchased the live stock returns per $100 feed bought would give a rough indication of efficiency in the use of feeds. Live stock returns are calculated by adding: receipts from the sale of live stock, live stock products sold or used on the farm, and inventory increases, and subtracting purchases and inventory decreases. This total gives the total amount contributed by live stock enterprises on the individual farms. The average return per $100 worth of feed bought in Shubenacadie was $359, in Truro $467, in Tatamagouche $463 and in Scotsburn $501. The higher returns in the "cream" areas are partly due to the fact that a large percentage of summer feed for cattle was in the form of pasture.

It is natural to expect that farms obtaining greater returns from the use of feeds obtain larger farm incomes. In the Shubenacadie area farms obtaining over $400 for every $100 of purchased feed had an average farm income of $1,440 while those obtaining less than $400 had average farm incomes of $971. In the Truro area farms with greater live stock efficiency had average farm incomes of $1,571 compared with $613 on farms with less efficiency. In Tatamagouche, farms with greater efficiency in feed had farm incomes of $531 against $326 for the less efficient. In Scotsburn the figure was $851 for the more efficieint against $362 for the less efficient.

There are three recognized ways of improving live stock efficiency, namely, breeding and care of live stock, economical feeding, and quality of output. In all areas surveyed the main feed produced on the farm was hay. It is essential that this hay be of as high a

quality as possible. The second most important crop is pasture which will provide a relatively cheap source of feed when properly handled. In the fluid milk areas the greater part of the grains and millfeeds fed is bought, so it is quite important that the cows use that feed efficiently in producing the maximum amount of milk. The weeding out of unproductive stock is essential to success in the dairy business.

Cropping Efficiency

High crop yields are important in the production of feed and cash crops. To measure efficiency in crop production, the crop index is used. The index is compiled by ascertaining the average yield of all crops of all farms studied and taking this as 100. The yield of individual farms are then compared with the average and their indices will be shown as greater or less than 100, according to how the individual farm yield compared with the average yield. Thus a farmer with a crop index of 120 has yields greater by 20 per cent than the average in the district while one with an index of 75 has yields lower by 25 per cent. The index in this study is based on hay and grain since these crops constitute the main ones produced.

Table 21. Effect of Efficiency in Land Use on Labour Earnings as Measured by Crop Index

Crop Index	Number of Farms	Average Labour Earnings
		$
70 whole milk farms		
Less than 100	35	843
100 or more	35	1369
99 farms cream shipping		
85 or less	31	621
86 to 100	31	693
101 or more	37	906

The crop yield has a decided influence on operator's earnings (table 21). Generally, little extra labour is required to harvest larger yields and consequently farmers should strive to increase such yields to attain greater efficiency. Higher yields can be attained by using high yielding varieties and by studied cultivation.

While it is generally true that farms with the highest yields have the highest earnings, it should not be forgotten that in the four areas surveyed, except possibly Truro, the most important crops

are hay and pasture, and grains grown in the rotation merely assist in the more efficient production of those crops.

Effectiveness of Capital

The number of years required for cash receipts to equal farm capital is a measure used in judging the effectivenss of capital. It is desirable that capital be used to its full capacity and maximum earnings from its uses be obtained.

Table 22. Effectiveness of Capital

Years for Cash Receipts to Equal Capital	Number of Farms	Average Labour Earnings
		$
70 whole milk farms		
Over 3 years	33	353
3 years or less	37	1846
99 farms cream shipping		
3 years or over	48	403
Under 3 years	51	1075

An investment such as a barn or hen house, capable of housing 20 cows or 300 hens is not being used efficiently if only 10 cows or 100 hens are being kept. The portion of the operating costs known as interest on investment is thereby doubled or trebled. With equipment the important consideration is to get it adjusted to the job to be done. A big machine does not do a small job efficiently. A little calculation on the use that can be made of a new machine is always desirable before it is purchased.

In each area surveyed there was found to be a close relationship between operators' earnings and the rate of turnover. Farms on which cash receipts would equal total capital in three years or less were found to have higher labour earnings than those that required a longer period of time (table 22). On the whole milk farms with a period of turnover of three years or over the average labour earnings was $353 while on those farms in which cash receipts equalled total capital in less than three years had labour earnings of $1,846. In the "cream" areas of Tatamagouche and Scotsburn a similar situation prevailed - the figures being $403 and $1,075 respectively.

Labour Efficiency

The amount of work accomplished per worker even if all worked the same number of hours would vary greatly. This variation comes from the methods of doing work. To measure this variation the time necessary to be spent by an average worker on various types of productive work on the farm under average conditions as referred to on page 20 has been calculated and expressed in "man work units" (what one man should accomplish in one ten-hour day). The total of "man work units" for all the farm's activities can then be assessed and efficiency judged by comparing this unit with the number of ten-hour days the farm operator and his hired or family help have worked. High output per man seems to be closely related to the size of farm business. The farms were, therefore, first classified as large and small farms on the basis of man work units necessary and then sub-divided on the efficiency of labour on each size group. This is shown in Table 23.

Table 23. Relation of Labour Efficiency to Earnings

Man Work Units per Man	Number of Farms	Average Labour Earnings
		$
33 whole milk farms with 300 or less man work units		
Less than 200 per worker	22	370
200 or more per worker	11	1240
37 whole milk farms with 300 or more man work units		
Less than 200 per worker	13	820
200 or more per worker	24	1962
53 cream shipping farms with 250 or less man work units		
Less than 160 per worker	29	554
160 or more per worker	24	914
46 cream shipping farms with over 250 man work units		
Less than 200 per worker	23	465
200 or more per worker	23	1202

It will be seen from the table that in each size group where more productive work per man was performed the labour earnings of the operator were higher.

Combination of Enterprises

Some enterprises on farms pay better than others. In the year of the study for example, poultry seemed to be paying well, where disease could be controlled. In general, good earnings were associated with the largest possible size of the best paying enterprises. However, there are some advantages in certain combinations of enterprises which fit well together as long as the combination is not allowed to interfere too seriously with the necessary size of a best paying enterprise. The reason is that a combination may be able to provide profitable employment for labour not fully occupied with main enterprises; it may provide outlets for by-products of enterprises one to another, as for example, skim milk for poulty or hogs that aid in the efficiency of those lines. Cream production tends to be a low return enterprise by itself but is an excellent enterprise in combination with other enterprises.

While cream production may work well in combination it must be efficient before it will add to an operator's earnings.

Table 24. Combination of Enterprises - Cream Farms

Number of Cows	Number of Farms	Average Labour Earnings $	Average Number of Cows
With 220 pounds butterfat or less sold per cow			
8 cows or less	28	602	6
More than 8 cows	20	454	10
With over 220 pounds butterfat sold per cow			
8 cows or less	25	849	7
More than 8 cows	26	884	10

It was found that when cream sales were less than 220 pounds of butterfat per cow the more cows the farm had the lower was the net earnings to the operator (table 24). However, on farms with production high enough to sell more than 220 pounds per cow the farms with the most cows had the best earnings.

SUCCESSFUL FARM MANAGEMENT

Details of one successful farm in each area is given in Table 25. The object of this table is to give some indication of what is done on a successful farm in actual practice. The farms selected were not necessarily those with the highest earnings but those that represented what is considered the typical farm organization in each area. These farms are producing enough to make a comfortable living and are better than average in those factors which constitute successful farm management. In the Shubenacadie area a farm was selected that derived its main source of income from fluid milk. The farm in the Truro area obtained a considerable part of the income from crop sales along with fluid milk; in Tatamagouche hogs and cream were the main products and in Scotsburn hogs, hens and cream.

Shubenacadie Area, Farm No. 18.- This is an example of a farm that derives its main income from the sale of live stock and fluid milk. Live stock sales amounted to $1,580 and fluid milk to $6,108. Live stock sales consisted of eight cows and twenty-four calves. While this farm is larger than the average it is typical of the type of farm organization with extensive hay land and pasture. Grain is grown mainly as a nurse crop in the rotation. Feed was the largest single item of expense $1,014 followed by labour $912.

An average of 7.292 pounds of milk per cow was sold amounting to 189.618 pounds for the herd with a high of 19.416 pounds in June and a low of 13.542 in December. The herd is maintained by raising young stock rather than buying from outside which has a tendency to keep disease under control.

The farm required two men the year round plus 8 months of additional labour.

A sufficiently large unit combined with good production made this farm a financial success.

Truro Area, Farm No. 68.- This farm represents a cash crop enterprise combined with a relatively large live stock enterprise stressing dairying.

Crop sales of $1,605 were obtained, from turnips ($750), potatoes ($660), and vegetables ($195).

In addition to crop sales, sales of live stock amounted to $600 principally cows and calves. Live stock product sales amounted to $3,100.

The largest single items of expense were feed ($780) and labour ($549).

Table 25. Farm Organization of one Successful Farm in Each Area Studied

		Shubenacadie: Farm No.18	Truro: Farm No.68	Tatamagouche: Farm No.80	Scotsburn: Farm No.160
Size					
Acres Operated	ac.	320	319	100	309
Total Capital Invest.		21798	14369	6810	6980
Total Work Units		524	413	220	271
Farm Crops					
Oats	ac.	14	8	10	10
Other Grains	ac.	0	0	7	0
Turnips	ac.	0	3	0	0
Potatoes	ac.	1	4.0	(	.5
Vegetables	ac.	.25	1.0	(.25	1.0
Hay	ac.	72	38	28	25
Total Acres Cropped		87.25	54	34.25	36.5
Crop Sales	$	0	1605	0	48
Crop Index		157	173	101	110
Live Stock					
Cows	no	26	17	11	9
Milk or Cream Sold per Cow	lb.	7292	7880	306 B.F.	281 B.F.
Other Cattle	no.	10	12	5	7
Sows	no.	0	0	1	1
Other Hogs	no.	0	0	12	8
Hens and Chickens	no.	0	220	0	300
Live Stock Sales	$	1580	600	1650	704
Live Stock Product Sales	$	6180	3100	1623	1737
Live Stock Returns per $100 Feed	$	745	582	661	400
Receipts and Expenses					
Total Receipts	$	7823	6565	3853	2992
Total Expenses	$	4780	3452	1945	1416
Earnings					
Farm Income	$	3043	3113	1638	1586
Labour Earnings	$	2856	2966	1749	1929
Use of Labour and Capital					
Man Equivalent		2.8	1.5	1.1	1.1
Work Units per Man		187	275	200	271
No. of Years for Receipts to Equal Capital		2.8	2.7	2.1	2.8

A crop index of 152 indicates a high yield. This combination of cash crops and dairying ensures maximum utilization of labour and accounts for high farm earnings.

Tatamagouche Area, Farm No. 80.- This is a farm with an average size of herd and a higher than average number of hogs. Hog sales amounted to $1,530 and the sale of cream $1,623. These were the two major sources of income. The feed bill ($499) was relatively small for considerable grain was grown on the farm for hog feed.

The farm work was done almost entirely by the operator, the labour bill amounting to $143.

This farm is a good example of an average size dairy herd combined with a sufficiently large number of hogs to make that enterprise worth while.

Scotsburn Area, Farm No. 160.- This is a well balanced one man farm featuring an average dairy enterprise supplemented with hogs and poultry. Live stock sales were comprised of $478 for hogs and pigs and $226 for poultry. Dairy product sales, mainly cream, amounted to $1,317 and eggs $421.

The chief item of expense was feed ($728) with no outlay for labour. Crop yields were good and this coupled with good returns from live stock served to make this farm profitable.

The chief reasons for the success of these four representative farms may be pointed out as follows:

(a) The farms had sufficient volume of business to insure profitable employment of the farm labour force and reasonable net returns.

(b) Crop yields were higher than average in all cases.

(c) Capital was being used effectively with the average business turnover being under 3 years.

(d) The amount of work accomplished per man was higher than the average.

(e) Live stock efficiency as measured by production per cow or by the returns per $100 worth of feed bought was high in all instances.

GENERAL SUMMARY

The most significant facts brought out by this study of the fluid milk and cream areas are:

1. A large volume of business is necessary for large earnings. Greater efficiency of live stock and crop production is a significant factor in developing this volume as well as the acreage.

2. The efficiency of live stock enterprises which are the main revenue producing sources as measured by the production per cow and the relation of returns to feed purchased, has an important bearing on farm income.

3. Cropping efficiency, while of lesser importance, has a direct bearing on successful farm management.

4. Capital and labour as employed in the districts surveyed can only be effectively utilized in connection with a moderately large volume of business.

A SUGGESTED FARM PROGRAM FOR THE TATAMAGOUCHE - SCOTSBURN AREA

It has been pointed out in the survey that the main income in the Tatamagouche - Scotsburn areas is derived from live stock. It has also been emphasized that one of the main caused of low income in these areas is due to the small volume of business. A small business cannot produce a large income and a large income is necessary today if people are to maintain a good standard of living.

A farm program is outlined in the following pages in order to give some indication as to how income can be increased on the average farm in the Tatamagouche - Scotsburn area. The acreage of crops, the number of live stock, the probable income and expenses are set forth to show in a general way the necessary organization that could take place to increase volume of business. This program is presented after taking into consideration that the average investment in farms in those areas is small, that the cream enterprise is a low return enterprise; that hogs and poultry can be added to the farm program without undue expense and that this program would not involve the employment of additional labour. There is also room for improved working methods which would permit this greater volume to be handled with no increase in physical effort.

This program is based on cows, hogs and poultry and average production is assumed in each case. When a sound farm organization is established in live stock, supplementary income can be acquired by

growing such cash crops as turnips and strawberries provided the necessary labour is available. It is felt that this outline of a farm program on a farm which shall be called "Farm X" can be adapted to the average farm in Tatamagouche and Scotsburn. For purposes of explanation the program is divided into four parts: (a) "Live Stock and Feed Program"; (b) "Estimated Cash Income", (c) "Estimated Cash Expenses and Farm Income", and (d) "Labour Requirements".

Live Stock and Feed Program

Since Farm X is a live stock farm it is necessary to begin by estimating the required amount of feed to be grown and purchased. Main emphasis as regards the crop enterprise will be placed on hay and pasture, with the growing of grain as a necessary part of the rotation. Table 26 presents the number of live stock on Farm X, the amount of feed required to feed this live stock, the crops grown on the farm and the feed that will be purchased. Careful study should be given to Table 26 as it outlines the enterprises on Farm X from which the farmer is to receive his cash income.

Table 26. Number of Live Stock and Annual Feed Requirements on Farm X

Live Stock	No.	Mixed Grain	Hog Feed	Protein Feed	Poultry Feed	Hay	Turnips
		bu.	lb.	lb.	lb.	ton	bu.
Horses	2	94	-	-	-	4	600
Cows	8	270	-	1100	-	16	80
Heifers	2	20	-	200	-	2	-
Calves	3	18	-	100	-	1	-
Brood Sows	2	-	-	-	-	-	40
Market Hogs	28	-	20000	2400	-	-	80
Hens	200	-	-	-	16000	-	-
Chickens	200	-	-	-	6000	-	-
Total Feed Required		402	20000	3800	22000	23	800

As shown in Table 26, live stock on Farm X includes 2 horses, 8 cows, 5 young cattle, 2 brood sows, 28 market hogs during the year, 200 laying hens and 200 chickens. The estimated feed requirements have been calculated and the required purchased feeds shown. For purposes of simplicity it will be assumed that all grains grown on the farm will be fed to the cows. The kind of protein feed for the cows and hogs has not been stipulated for most of this feed will be purchased. The feed for the cows is included with the hogs. These estimates will cover feed requirements for one year.

Feed grown on farm: 10 acres grain - 40 bu. per acre = 400 bu. grain.
20 acres hay - 1.5 tons per acre = 30 tons.
1 acre turnips - 800 bu. per acre = 800 bu.

Feed to be bought: 20,000 lbs. hog feed.
3,800 lbs. protein feed.
22,000 lbs. poultry feed.

The most important part of the feed program as far as home grown crops are concerned is hay and pasture. Twenty-three tons of hay are required and with a yield of 1.5 tons per acre, 20 acres will provide a safe margin. Fifteen acres of properly farmed pasture will also be sufficient. Since live stock will thrive better on roots, one acre of turnips will be grown. In this program the acreage devoted to hay and pasture is smaller than is so devoted at the present time in Tatamagouche and Scotsburn. It is felt that by properly farming a smaller acreage especially pasture that more beneficial results will be obtained.

Estimated Cash Income of Farm X

The prices used in estimating the probable income on Farm X are based on farm prices for the year 1946 and except in the case of butterfat production per cow, average production figures are used. The butterfat production per cow has been set at 300 pounds for it is difficult to carry on dairy farming profitably with a smaller production per cow. Many average herds are securing that production today in the Tatamagouche - Scotsburn area. Improved pasture and better quality hay will bring this about as the breeding of the live stock in the area on the whole is good.

Table 27. Anticipated Cash Income on Farm X

	Average Price	Estimated Amount Received
	$	$
Cows - Number cows 8, average production per cow 300 lbs. butterfat	.50	1200
Cattle Sales - Cows 2	80.00	160
Calves 4	15.00	60
Hogs - Number sows 2 - pigs per sow per year 14		
Sales Market Hogs 28	33.00	924
Poultry - Number hens 200 - Eggs per hen per year 160. Number pullets 200 - Eggs per pullet to year end 48 eggs each. Egg Sales dozen (2666 hens - 960 pullets)	37.00	1342
Hen Sales (150 hens)	1.25	187
Total Cash Receipts for Live Stock		3873

It is planned that each of the sows will farrow twice a year with litters averaging 7 pigs each. This will give a total of 28 pigs for sales.

It is also planned to keep 200 laying hens and to maintain this flock 200 chicks are bought annually. Production per hen and pullet, while higher than the provincial average, is normal production to be expected. The skim milk is fed to chickens and young pigs.

Estimated Cash Expenses and Farm Income

The main increase in the operating expense which this program will incur is the increase in the feed bill. Other expenses will remain on the average as they are set out in Table 15 on page 16.

It has been assumed that grain grown on the farm will be fed to the cows. Consequently all the hog feed will have to be purchased except turnips and some pasture for the sows. According to Table 22, 22,400 pounds of hog feed will be required, which at 2 cents per pound will cost approximately $450. For poultry 22,000 pounds will be needed which at $2\frac{1}{2}$ cents per pound will amount to $550. Protein feed for the cows should not amount to more than $35. Thus the total feed bill on Farm X will be $1,035. By substituting this $1,035 for the $519 (feed bill) in the Scotsburn area in Table 15, page 16, the current operating expense on Farm X will be $2,020.

Thus the cash income on Farm X from the sale of farm products is estimated at $3,873, the operating expenses at $2,020 leaving a working balance of $1,847. The average of current income over current expenses for the Tatamagouche area according to the survey was $831 and for Scotsburn $959.

The figures presented above relate solely to current income and current farm expenditure. There are additional expenditures for family living and normally for some capital outlay such as live stock and new equipment, but these must be met from the working balance and will not differ materially from present conditions. On the credit side, the farmer takes for his personal use a number of products grown on the farm and has a home to live in.

Labour Requirements

It has been realized in the preparation of this program that the average farm in the Tatamagouche - Scotsburn area is a family unit, usually operated by the farmer with the aid of his wife and children. Consequently the number of live stock and acreage have been calculated to provide sufficient work for one full time operator with such additional family labour as may be available. It has already been pointed

out that the amount of work required to care for a cow, to look after 100 hens or to grow one acre of grain is fairly well established. In Table 28 an estimate of the work on Farm X is presented.

Table 28. Number of Days Work Required to Operate Farm X

Live Stock	Number	Days of Work
Cows	8	96
Heifers	2	4
Calves	3	6
Brood Sows	2	6
Market Hogs	28	14
Hens	200	40
Chickens	200	20
Crops	Acres	
Hay	20	20
Grain	10	20
Turnips	1	10
		236

According to these estimates it will require 236 days to run Farm X. That is, it will require that number of days to care for those enterprises from which Farm X is to receive a direct cash income. It is understood that there are other jobs on this farm as caring for horses, repairing machinery and buildings, cutting the wood supply and other related duties. However, the 236 days is directly related to farm projects which will return cash income and can be accomplished by one man with the help of the family unit. There will be times when a few days additional labour will be required for the unproductive jobs mentioned above.

CONCLUSION

An attempt has been made to outline a farm program which would be adaptable to conditions as they exist in Tatamagouche and Scotsburn. The program aims to overcome some of the fundamental weaknesses as found in the present farm organization in those areas.

The first feature of this program is that it will enable the individual farmer to increase his cash income or in other words to

increase his volume of business without an undue increase either in his capital expense or his labour requirements. If the farmer is to enjoy a standard of living comparable to that enjoyed by those engaged in other types of activity it is absolutely fundamental that he have sufficient volume of business. Secondly, this program recognizes that cream production as an individual enterprise does not give sufficient returns to create a high cash income, and consequently it must be carried on in conjunction with other enterprises. Thirdly, this program is suited to the average labour unit as found in those districts, namely, the family unit. Lastly, poultry and hogs when raised in sufficient numbers form a good workable combination with cream production under the conditions as they exist in Scotsburn and Tatamagouche.